

Lead Poisoning in Children

Elevated blood lead levels in children can impair mental and physical development. While potential sources of lead in the environment have been reduced dramatically due to regulatory bans of leaded gasoline and lead-soldered food cans, it is estimated that 890,000 children nationwide may still have elevated blood lead levels. In Texas, approximately 4% of children have elevated blood lead levels. Children may continue to be exposed to lead through chipping and peeling lead-based paint, imported pottery with leaded glazes, parental occupations and hobbies that involve work with lead, and folk medicines that contain lead. Children are at greater risk for lead exposure than are adults because children tend to have more hand-to-mouth activity and because their digestive systems absorb a

Laboratories and medical providers send reports of blood lead test results to the program staff by telephone, mail, fax, and on computer diskette. During 1998 over 320,000 reports of blood lead test results were received, representing 286,995 individual children. Only elevated blood lead test results are required by law to be reported, but laboratories have been asked to voluntarily report all blood lead test results. Currently, 45 laboratories located throughout the nation report blood lead results to the Texas Department of Health (TDH). Sixty percent of the laboratories (27 of 45) voluntarily report all blood lead test results. Reports from these 27 laboratories account for over 99% of the total reports received.

Table 1. Percent of Elevated Blood Lead Reports* in Children by Medicaid Status and Lead Level

Medicaid Status	Blood Lead Level (micrograms per deciliter)					Total
	10 - 14	15 - 19	20 - 44	45 - 69	70+	
Medicaid	2.9	0.6	0.3	0.1	0.1	4
Non-Medicaid	3.4	1.0	0.4	0.1	0.1	5

*based on results of the first blood lead test reported.

greater portion of the ingested lead.

The Texas Childhood Lead Surveillance Program began operation on January 1, 1996, when childhood lead poisoning and elevated blood lead levels in children became reportable conditions in the State of Texas. In this report, the term "childhood lead poisoning" means blood lead concentrations of 45 Fg/dL of blood or greater, in persons younger than 15 years old. The term "elevated blood lead levels in children" means blood lead concentrations of 10 Fg/dL or greater in persons younger than 15 years old.

Tables 1 through 3 provide a summary of data collected during 1998. In these tables, only the first blood lead test result for a child is included; results of follow-up tests are not presented. During 1998, 4% (11,166) of the cases reported to the Childhood Lead Surveillance Program met the standard for elevated blood lead levels. While the majority of the children (70%) had only slightly elevated blood lead levels (10 to 14 Fg/dL), 19 children had blood lead levels greater than 70 Fg/dL, a level considered indicative of an acute medical emergency.

Ninety-two percent of the children in the Childhood Lead Surveillance Program database are or have

Table 2. Number of Reported Blood Lead Tests* in Children by Age (in months) and Lead Level

Age (Months)	Blood Lead Level (micrograms per deciliter)						Total
	<10	10 - 14	15 - 19	20 - 44	45 - 69	70+	
0-11	43,334	550	137	90	4	3	44,118
12-23	50,941	2,092	499	286	13	7	53,838
24-35	30,148	1,596	350	168	5	3	32,270
36-47	25,323	1,132	255	124	4	1	26,839
48-59	27,211	997	212	131	5	3	28,559
60-71	20,013	559	125	44	2	1	20,744
72+	78,859	1,292	301	167	7	1	80,627
Total	275,829	8,218	1,879	1,010	40	19	286,995

been enrolled in the Texas Health Steps Medicaid program. Because this program includes blood lead screening at 12 and 24 months of age, children enrolled in the Texas Health Steps program may be tested for lead more often than are children who are not enrolled. Children receiving federal assistance, such as Medicaid, are generally considered to be at higher risk for lead poisoning due to the potential for living in older housing with deteriorating lead-based paint. A recent report by the United States General Accounting Office¹ estimates that approximately 77% of the 890,000 children thought to have elevated blood lead levels are in, or are targeted by a federal assistance program. However, as is

shown in Table 1, our data indicate that in Texas, non-Medicaid children are also at risk for lead poisoning. Five percent of non-Medicaid cases were reported as having an elevated blood lead level as compared to 4% of the Medicaid cases. Table 2 shows that over 53,000 reports (nearly 20% of all reports) are for children from 12 to 24 months of age. However, of all the age groups, the percent of children with elevated blood lead levels was greatest among children aged 24 to 35 months, with 6.6% having elevated blood lead levels. Children aged 24 to 35 months are highly mobile and may have an increased opportunity to come into contact with lead in their environment. In addition, they may still explore their environment by putting non-food objects such as paint chips or dirt into their mouths, by playing on the floor or the ground or by chewing on window sills or other painted surfaces. These activities may increase the risk for exposure to lead.

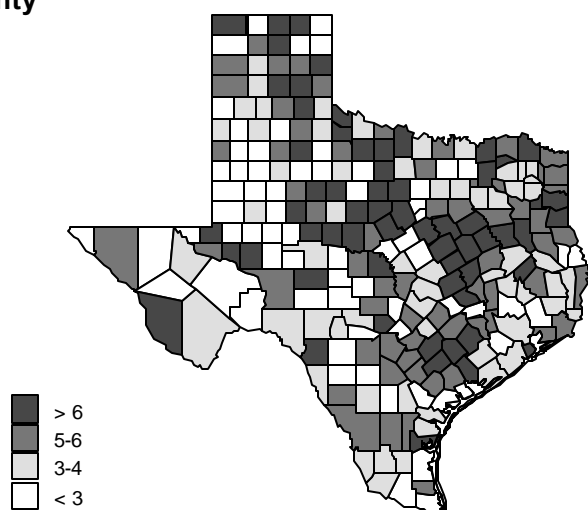
Figure 1. Percent of Elevated Blood Lead Reports by County

Table 3 shows that over 170,000 children, representing more than 60% of the total cases reported to the Childhood Lead Surveillance Program, are of Hispanic ethnicity. As noted previously, children enrolled in Medicaid are required to be tested for blood lead and are more likely to have their test results reported to the Texas Department of Health. Therefore, it is likely that this ethnic distribution simply mirrors that of the

Table 3. Number of Reported Blood Lead Tests* in Children by Race/Ethnicity and Lead Level

Race/ Ethnicity	Blood Lead Level						Total
	<10	10 - 14	15 - 19	20 - 44	45 - 69	70+	
Hispanic	171,565	4,939	1,070	606	21	7	178,208
African American, non-Hispanic	42,895	1,600	372	162	6	2	45,037
White, non-Hispanic	35,823	940	248	134	10	8	37,163
Asian, non-Hispanic	1,972	34	2	4	1	0	2,013
Native American, non-Hispanic	264	10	3	0	0	0	277
Other	3,711	94	16	8	0	0	3,829
Unknown	19,599	601	168	96	2	2	20,468
Total	275,829	8,218	1,879	1,010	40	19	286,995

Medicaid population, which also is nearly 50% Hispanic.

Figure 1 shows the “prevalence” of elevated blood lead tests by county. Prevalence in this case is the number of elevated blood lead tests divided by the total number of tests (elevated and nonelevated) reported for the county. The counties with the greatest prevalence of elevated lead tests are located primarily in the Panhandle and North Central portion (including the metropolitan statistical areas of Killeen, Temple and Waco) of the state. Many of the counties in the Panhandle area have greater than 33% pre-1950 housing.² During the 1990s the Panhandle was 1 of the 2 slowest growing regions in Texas.³ Thus the amount of new construction in this area would be substantially lower than that seen in the rest of the state. This lack of new construction would account for the higher percent of pre-1950s housing and the risk of a child living in a house with deteriorating lead-based paint may be greater.

Although no definite reason has been identified as to why children living in counties in the North Central portion of the state have more elevated lead levels, some possibilities are the presence of old industrial sources of lead or the presence in metropolitan areas of older homes with lead-based paint. While the percent of housing built before

1950 is lower in this area there are still large pockets of housing, particularly in the inner-city neighborhoods, that were built before 1950 and may contain lead-based paint.

In 1991 the United States Public Health Service set a goal of eliminating childhood lead poisoning in the United States in 20 years. To meet this goal in Texas, the information described above is being used to help target screening and prevention activities so that all children with elevated lead levels will be identified and treated (when appropriate), and the sources of lead exposure eliminated.

References:

1. United States General Accounting Office. Lead Poisoning-Federal health care programs are not effectively reaching at-risk children. Washington: GAO; 1999. Pub. No: GAO/HEHS-99-18.
2. United States Department of Commerce. Economics and Statistics Administration. Bureau of the Census. 1990 Census of Population and Housing. Washington: 1990. Pub. No: 1990 CPH-R-3.
3. The Dallas Morning News, Inc. The 1998-1999 Texas Almanac. Texas A&M Press Consortium. College Station, TX, 1997:293-96.

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